

REMARKS

Claims 24-26, 86-90 and 96 to 128 are in the application.

Claims 113-128 are added by this amendment.

Herein, EA will refer to the Examiner's Action's dated April 15, 1996.

In regard to applicant's claim of priority, in EA paragraphs 3.b.i, 3.b.iii, 3.b.iv and 3.v the Examiner states "the certified priority document may provide basis for compositions of the formula $RE_2TM.O_4$ ". It is noted that the Abstract of the priority document refers to "the general formula $RE_{2-x}AE_xTMO_{4-y}$, wherein RE is a rare earth, AE is a member of the group of alkaline earths or a combination of at least two members of that group, and TM is a transition metal, and wherein $x < 0.3$ and $0.1 \leq y \leq 0.5$." This formula permits no alkaline earth and a varying amount of alkaline earth and rare earths and a varying amount of oxygen. At column 3, lines 20 and 35, there is recited "the Ba-La-Cu-O system" and at line 41 " $La_{2-x}Ba_xDuO_{4-y}$ $x < 1$ and $y \leq 0$ and at line 44 teaches $La_{1-x}Ba_xCuO_{3-y}$."

The Examiner at page 2 of PA at paragraph 3.b.i states that the priority document does not provide support for "the limitations a composition including a transition metal, a rare earth or rare earth-like elements, an alkaline earth element, an oxygen as found in claim 86". It is noted that in the priority document at column 2, lines 13-19 it is stated that "it is a characteristic of the present invention that in the compounds in question that the RE portion is partially substituted by one member of the alkaline earth group of metals, or by a combination of the members of this alkaline

earth group and that the oxygen content is at a deficit." It is further noted that at column 2, lines 20-23 it states that "for example, one such compound that meets the description given by this lanthanum copper oxide La_2CuO_4 in which the tantalum which belongs to the IIIB group of the elements is in part substituted by one member of the neighboring IIIA group of elements." In the sentence bridging pages 2 and 3 of EA, the Examiner states that "the certified priority document may provide a basis for formula $\text{RE}_2\text{TM.O}_4$ at P.2, para. 4, but the claimed composition is deemed to be much broader than that formula." It is clear from the quoted sections of the priority document that the priority document clearly supports a much broader composition than the Examiner is stating that the priority document supports, and that the priority document, in fact, does support applicants' claim 86.

At page 3, paragraph ii of EA, the Examiner states there is no support for "the limitation 'non-stoichiometric amount of oxygen', as found in claim 86". Applicants submit that the use of the term oxygen deficit is noted by the Examiner at P.2, para. 4 of the priority document and the varying amount of oxygen given in both formulas is sufficient and adequate support for the limitation 'non-stoichiometric' amount of oxygen." In regards to paragraph iii of page 3 of EA, the Examiner states there is no support for "transition metal oxides" as found in claim 24. Claim 24 recites transition metal oxide which is explicitly recited in the priority document, as stated above. Claim 88 is directed to the superconducting material having a transition temperature in excess of 26°K. Claim 89 depends from claim 88 and recites that "said composition is comprised of a metal oxide." The priority document supports superconducting material containing or comprising a metal oxide. Claim 90 depends from claim 88 and recites "where said composition is comprised of a transition metal oxide, a copper oxide is a transition metal oxide." The published patent application corresponding to the priority document (EPO 0 274 343 A1, 7-27-88) at column 3, line 6 recites Ti as a transition

metal. It is noted that in claim 1 of the EPO published patent application corresponding to the priority document, claim 1 recites the structure $RE_{2-x}AE_xTM.O_{4-y}$ wherein TM is a transition metal. Claim 2 therein recites copper as the transition metal. Claim 3 therein recites nickel as the transition metal. Claim 8 therein recites chromium as the transition metal. Consequently, a broader class of transition metals other than copper is supported by the priority document.

At paragraph iv, on page 3 of PA, the Examiner states that "the limitation of 'copper-oxide compounds', as recited in claim 96" is not supported by the priority document with regards to which the Examiner states "the certified priority document may provide basis for compositions of the formula $RE_2TM.O_4$." As noted above, the general formula recited by the Examiner is incorrectly stated and should be stated wherein the quantity of oxygen, of the rare earth element and of an alkaline element is variable. Consequently, the term "a copper-oxide compound" is adequately supported by the priority document.

In paragraph v on page 3 of EA, the Examiner states that "the limitation to the effect that the 'copper-oxide compound' includes (including) at least one rare earth, rare-earth-like element and at least one alkaline-earth element 'as recited in claim 97... at claim 103...' is not supported by the priority document." The Examiner further states "the certified priority document may provide basis for compositions of the formula $RE_2TM.O_4$ ". Applicants as stated above respectfully submit the priority document refers throughout and, in particular, in the Abstract to "the general formula $RE_{2-x}AE_xEM.O_{4-y}$, as stated above which includes a copper-oxide as stated above. The Examiner further states "but basis is not seen for the more general limitation of 'a copper-oxide compound' with a rare-earth (like) element and in alkaline earth element." It is noted that in the priority document, claim 2 refers to lanthanum as the

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rare earth; claim 3 refers to cerium as the rare earth; claim 5 refers to barium as a partial substitute for the rare earth; claim 6 refers to calcium as a partial substitute for the rare earth; claim 7 refers to strontium as a partial substitute for the rare earth and claim 9 refers to neodymium as the rare earth. Clearly, priority document teaches barium, calcium, strontium. Consequently, the priority document supports the term rare earth-like since there are other elements other than those commonly referred to as the rare earth which are elements 57-71 which satisfy the teaching of the priority document and of the present application. The Abstract of the priority document refers to "AE as a member of the alkaline earth or a combination of at least two members of that group". Consequently, the priority document clearly supports an alkaline earth element.

At paragraph vi of page 4 of EA, the Examiner asserts that the priority document does not support "a non-stoichiometric atomic proportion" as found in claims 101, 102, 107 and 108. The exemplary general formula recited above which is recited in the priority document clearly shows the oxygen has a variable content and, consequently, is not in stoichiometric proportion. Consequently, the priority document clearly supports the term "non-stoichiometric atomic proportion".

At paragraph vii of page 4 of EA, the Examiner states that the priority document does not support "the limitation as to 'the effectively-zero-bulk resistivity intercept temperature T_0 ', as found in claim 103." Applicants responded to this same comment at page 6 of their response dated September 26, 1995 at pages 4-6 thereof. The Examiner has not commented upon applicant's remarks and has merely repeated what was said in the Examiner's prior Office Action. Applicant's assume that the Examiner agrees with applicant's statements in their prior response in that the concept of the intercept temperature is well known in the prior art and can be included in claim

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103.

In view of the remarks herein, the Examiner is respectfully requested to withdraw the objection to applicant's claim for priority under 35 USC 119 based on applicant's priority document.

In paragraph 4 of EA at page 4 thereof, the specification has been objected to under 35 USC 112, first paragraph, as failing to provide an enabling disclosure commensurate with the scope of the claims. Paragraphs 4.A, 4.B and 4.C on pages 4-5 of the PA are identical to the Examiner's comments in the previous Office Action.

Paragraph 4-C on page 5 of EA rejects claims 24-26, 86-90 and 96-108 under 35 USC 112, first paragraph, for the same reasons set forth in the objection to the specification which is the same as in the Examiner's prior Office Action.

In paragraph 4-D at page 5 of EA, the Examiner states that he has considered applicant's arguments in response to the Examiner's prior Office Action stating that they "have been fully considered but they are not deemed to be persuasive." At paragraph 4.D.i at page 5 of EA, the Examiner states "the additional case law and arguments by the applicants have been newly noted. For the reasons that follow, however, the record as a whole is deemed to support the initial determination that the originally filed disclosure would not have enabled one skilled in the art to make and use the invention to the scope that it presently claimed." The Examiner does not specifically respond to the specific passage cited from the case law, nor rebut their applicability in the way applicant's have applied them. Consequently, the Examiner's silence is viewed as agreement with applicant's argument.

At paragraph d.ii on page 6 of EA, the Examiner states that "the applicant's quote several passages from their specification at pp. 13-15 of their September 29, 1995 amendment, the issue is the scope of enablement, not support". The Examiner further states "the issue here is the scope to which that disclosure would have taught one skilled in the art how to make and use the composition which shows the onset of superconductivity above 26°K." Applicant's respectfully disagree since recitation of examples is part of the support for the scope of enablement. In addition to the examples recited at page 13-15 of applicant's specification, applicants' comments in their September 29, 1995 amendment, at pages 15-25 clearly show that applicant's "disclosure would have taught one skilled in the art how to make and use the composition which shows the onset of superconductivity above 26°K."

At paragraph d.iii on page 6 of EA, the Examiner states "construed in light of that issue, the invention is not deemed to have been fully enabled by the disclosure to the extent fully claimed." Applicant's respectfully disagree and note that the Examiner has not specifically rebutted applicant's arguments on page 15-25 of applicant's September 29, 1995 amendment. All that the Examiner has said is that "the invention is not deemed to have been fully enabled by the disclosure to the extent fully claimed."

At paragraph d.iii.1 on page 6 of EA, the Examiner states in regard to applicant's argument in their September 29, 1995 amendment that applicant's states their disclosure "lists several species such as $\text{La}_{2-x}\text{Ba}_x\text{CuO}_{4-y}$, which they indicate are found in the present disclosure." Applicant's disclosure supports a substantially broader scope than this species. In particular, the Examiner is directed to applicant's Summary of Invention on page 6-9 of applicant's application. There is no requirement that applicants list every possible species that could possibly come within the scope of

applicant's claims. Applicant's broadly teach transition metal oxides which can contain rare earth and alkaline earth elements.

At paragraph D.iii.1.a, at page 6 of EA, the Examiner states "notwithstanding that argument it still does not follow that the invention is fully enabled for the scope presently claimed." Applicant's respectfully disagree for the reasons provided by applicants on page 15-25 of their September 29, 1995 amendment.

At paragraph d.iii.1.b at page 6 of EA, the Examiner refers to the paragraph bridging pages 3 and 4 of applicant's specification. The Examiner states "the present specification actually shows that known forms of 'transition metal oxide' and 'a copper-oxide compound' do not show the onset of superconductivity above 26°. The Examiner then states that "applicants state that the prior art includes a Li-Ti-O system with superconducting onsets as high as 13.7° K." Applicants do not see the relevance of the Examiner's statements. Such a composition would not be included within the claims since applicant's claim covers only compositions having superconductivity above 26°K. Applicant's acknowledge that Ti is a transition metal. The Examiner notes "that disclosure also refers to 'a second non-conducting CuO phase at p. 14, line 18.'" Applicant's do not understand the significance of this quoted passage is to the Examiner's argument.

At paragraph d.iii.1.c at page 7 of EA, the Examiner states "accordingly, the present disclosure is not deemed to have been fully enabling with respect to the 'transition metal oxide' of claim 24, the 'composition' of claim 88 or the 'copper-oxide compound' of claim 98." Again, applicant's note applicant's arguments on page 15-25 of their September 29, 1995 amendment. Applicant's, at page 5, line 3 of their specification, refer to transition metal oxides and the sentence bridging pages 5 and 6

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to superconducting composition at a T_c greater than 26°K.

At paragraph d.iii.2 of page 7 of EA, the Examiner states that "the examples of p. 18, lines 1-20, of the present specification further substantiate the finding that the invention is not fully enabled for the scope presently claimed." Applicant's respectfully disagree.

At paragraph d.iii.2.a at page 7 of EA, the Examiner refers to an example in the first paragraph of page 18 of their specification which says at line 10 "and there is no superconductivity." The Examiner appears to be using this paragraph to support the Examiner's assertion that applicant's claims are not enabled by their disclosure. Quite to the contrary, this paragraph supports applicant's assertion that their claims are enabled. Applicant's are providing a broad teaching of how these compositions can be fabricated, by providing a teaching which has not resulted in superconductivity, applicant's are providing a teaching of methods which do lead to examples showing superconductivity. Even if the claims encompass some inoperative examples, this does not render the claims unenabled. Moreover, the claims specifically refer to compounds which are superconducting. Consequently, a sample which is not superconducting is not within the scope of the claim. Applicant's submit that the Examiner is citing fragments of statements from their specification out of context resulting in a misunderstanding of applicant's teaching.

At paragraph d.iii.2.b, at page 7 of EA, the Examiner refers to applicant's example which appears to be in the third paragraph of page 18 of applicant's specification which at line 20 recites $T_c=26^{\circ}\text{K}$. The Examiner then says that applicant's claims require T_c to be greater than 26°K in what appears to be an attempt to show that applicant's claims are not enabled. Applicants do not believe the

recitation of 26°K in the specification and > 26°K in the claims has any significance to this argument. Applicant's can amend their claims to say $\geq 26^\circ$ if that's what the Examiner would prefer. Clearly, the temperature consistent with applicant's claims can be infinitesimally close to 26°K.

At paragraph d.ii.2.c at page 7 of EA, the Examiner states "consequently, the present disclosure is not deemed to adequately enable the full scope of the present claims." The Examiner further states "independent claims 86 and 103 may require the presence of rare earth, alkaline earth, and transition metals, but the aforementioned examples show that superconductivity is still very unpredictable." Applicant's respectfully disagree that the aforementioned examples show that superconductivity is still very unpredictable. The Examiner has taken applicant's examples out of context. These examples are provided as part of the teaching on how to fabricate the claimed invention.

The Examiner further states "those claims cannot be deemed to be fully enabled." Applicants respectfully disagree. It is also noted again that the Examiner has not addressed applicants arguments on page 15-25 of applicants September 29, 1995 amendment.

At paragraph d.iv on page 7 of EA, the Examiner refers to 3 affidavits submitted by applicants. Applicants acknowledge that the 3 affiants are employees of the assignee of the present application. At paragraph d.IV.1 at page 8 of EA the Examiner states "those affidavits do not set forth particular facts to support the conclusions that all superconductors based on applicants' work behave in the same way and that one of skill in the art can make those superconductors without undue experimentation. Conclusionary statements in an affidavit or specification do not

provide the facts or evidence needed for patentability." The referred to affidavits are dated after August 19, 1995 a period of more than 8 years after the present application was filed. Those affidavits refer to developments in the field after the publication of applicants which was cited on page 6 of applicants specification. The statements in the affidavits are not conclusionary but are statements of fact. By the Examiners statement that these are conclusionary the Examiner appears to be placing himself up as an expert in the field of superconductivity. Applicants respectfully request that the Examiner submit an affidavit in the present application rebutting the position taken by applicants 3 affiants.

At paragraph d.iv.2, at page 8 of PA, the Examiner states "those affidavits do not overcome the non-enablement rejection. The present specification discloses on its face that only certain oxides compositions of rare earth, alkaline earth and transition metals made according to the certain steps will superconduct at greater than 26°K." Applicants respectfully disagree with this statement. Applicants' specifications discloses substantially more as applicants have indicated above and as applicants have indicated in their amendment of September 29, 1995. Applicants work clearly started the field of high-temperature superconductivity. Consequently, applicants teaching has enabled this entire field. The Examiners statements to the contrary have no basis in fact.

At paragraph d.iv.3 of page 8 of PA, the Examiner states "those affidavits are not deemed to shed light on the state of the art and enablement at the time the invention was made." Applicant's respectfully disagree. The Examiner has not shown any reason contrary to applicants assertion that the superconducting materials can be made by the methods disclosed by applicant's and as stated by applicant's 3 affiants. Applicant's have objectively enabled their application and their claims. Applicant's

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have pointed to copious locations in their specification which do provide support for applicant's claims.

At paragraph d.iv.4 at page 8 of EA, the Examiner states that "it is fully understood that the applicant's are the pioneers in high temperature metal-oxide superconductivity. The finding remains, nonetheless, that the disclosure is not fully enabling for the scope of the present claims." Applicant's respectfully disagree. The Examiner has provided no substantial evidence to support this assertion. It is respectfully requested that the Examiner support their assertion with factual evidence and not unsupported statements.

In view of the remarks herein, the Examiner is respectfully requested to withdraw the objection to the specification under 35 USC 112, first paragraph, and the rejection of claims 24-26, 86-90 and 96-108 under 35 USC 112, first paragraph.

Claims 86-87 and 96-108 have been rejected under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant's regard as their invention. Applicant's note that the Examiner has not responded to applicant's comments which supports applicants position that a person of skill in the art would understand the terms "layer-type" and "perovskite-like" and has just repeated their rejection of the prior Office Action. Applicant's respectfully request the Examiner to comment on applicant's prior remarks.

In view of the remarks herein, the Examiner is respectfully requested to withdraw the rejection of claims 86-87 and 96-108 under 35 USC 112, second paragraph.

Claims 24-26, 86-90 and 96-108 have been rejected under 35 USC 102(a) as being anticipated by Asahi Shinbum Int'l. Satellite Edition (London) November 11, 1986. The Examiner incorrectly gives a date of November 11, 1986 for this article. It is November 28, 1986.

Paragraph 6.a and 6.b of page 10 of EA are essentially the same as in the Examiner's prior action. Applicant's have responded to these paragraphs in their prior response.

In paragraph 6-C at page 10 of EA, the Examiner notes applicant's prior responses and states that they "have been fully considered but they are not deemed to be persuasive." It is noted that in the declaration of co-inventors J.G. Bednorz and K.A. Mueller dated March 21, 1988, mailed into the patent office on June 22, 1988 at paragraph 3 states "On approximately October 16, 1986, we gave Praveen Chaudhari... six samples of the high temperature superconductive ceramic oxide materials that we had described in our aforementioned Z Physik B. publication. Praveen Chaudhari brought these samples back to the U.S. when he returned after visiting with us on or about October 16, 1986." This is evidence that these samples are brought into the United States on or about October 16, 1986. When these samples came into the United States, since they were inherently superconductive as claimed, the invention was essentially reduced to practice in the United States on that date. It is further noted that the Declaration of Alexis P. Malozenoff signed March 30, 1988 states at paragraph 3, "On or about November 15, 1986, Richard Greene and I travelled to Baltimore for a magnetics conference. During our travel to Baltimore, we discussed Greene's ongoing experiments in high T_c superconducting samples which he said had been received from Bednorz and Mueller." This is clear evidence that by November 15, 1986, superconducting samples fabricated by applicant's were being

measured in the United States. These samples were inherently superconducting and, consequently, established the reduction to practice in the United States as of that date. The Declaration of Cheng-Chung John Chi dated March 29, 1988 states at paragraph 2, "At a time prior to approximately the middle of November, 1986, Chang C. Tsuei told me a measurement he made on T_c superconducting material which he said were received from Georg Bednorz and K.A. Mueller, two physicists working for IBM Corporation in Zurich, Switzerland... Chang Tsuei said that he had measured resistivity versus temperature of these samples." This is again further evidence that the Mueller Bednorz superconducting samples were in the United States prior to the middle of November 1986."

At page 11 of EA in the paragraph labelled i, the Examiner states "the applicants argue that Sung II Park affidavit of March 30, 1988 states at para. 4 that measurements were taken of a superconductive sample on or before November 9, 1986, to the best of affiants recollection, or no later than November 15, 1986. The document evidence is not deemed to support that argument, however." In the paragraph marked (1) on page 11 of PA, the Examiner states "plots of those measurements are missing. See the Cheng C. Tseui affidavit of March 30, 1988, para. 6." This statement comes directly out of Cheng Tseui's declaration. Notwithstanding, Cheng Tseui's declaration says the measurements were made, that the plots that were taken were missing. The last sentence of this paragraph states "I believe that they may have been inadvertently thrown away when the laboratory was subsequently extensively cleaned." The Examiner further states "a hand-drawn diagram with the indication of a vacuum pumped down on November 9, 1988 also is not deemed to show that the measurements were taken." The Examiner is referring to paragraph 5 of the Cheng Tseui declaration and exhibit C which contains the hand-drawn figure.

At paragraph (2) of page 11 of EA, the Examiner points to cablegrams sent by Dr. Greene to applicants in Zurich which are attached as exhibit B to his declaration. The Examiner states "Dr. Greene reports that no indication of superconductivity has been seen in his specific heat measurements for temperature 4-35°K." The Examiner fails to note that in the same cablegram dated November 11, 1986, Dr. Greene states "this is not really too surprising given the very broad transition to have found in resistivity and susceptibility." The Examiner acknowledges that "exhibit C has pages dated December 1, 1986 on in exhibit D, which actually has plots and resistance versus temperature dated as early as December 3, 1986." The Examiner is conceding that high T_c superconductivity was measured on the samples which the very same set of cablegrams and affidavit say were in the United States in the middle of November 1986. Consequently, by the Examiner's own admission, samples which were in the United States were clearly shown to be superconducting as of December 3, 1986. Consequently, the samples that were in the United States as of November 9 were inherently superconducting. It is clear from the same declarations that applicant's were communicating with Dr. Greene. It is noted that Dr. Greene's cablegram dated November 25, 1986 to applicants states he will resume work on the new superconductor and that not much will happen because of the Thanksgiving holiday until the following week. There are cablegrams dated November 26, December 1, December 2, 1986 related to high T_c superconductivity. Dr. Greene's exhibit C has notebook pages dated December 1, 1986 to December 5, 1986. The December 5, 1986 shows T_c of 26°K and 30°K. Exhibit D show a plot of R vs. T dated December 8, 1986. Clear reduction to practice is shown and clear diligence is shown from prior to the date of the Asahi Shinbum article. This was clearly done in close correspondence with the applicants. Thus, the facts clearly show applicant's can swear behind the Asahi Shinbum reference.

At paragraph ii on page 11 of EA, the Examiner states "the applicant's assert that the Asahi Shinbum article reports a third parties confirmation of their original discovery. That assertion appears to be correct, but the article is still deemed to be prior art under 35 USC 102(a). At page 12 under paragraph 2, subparagraphs A, B and C, the Examiner made comments in regards to four cases applicant's have cited in support of their position that the Asahi Shinbum article should not be prior art because to hold it as prior art would not afford applicant's the benefit the one year grace period provided them under 35 USC 102(b).

At paragraph 3 on page 13 of EA, applicant's respectfully disagree that the earliest date with which applicant's can show for their invention in this country is December 1986. Numerous affidavits which applicant's have submitted clearly show that applicant's have, in early November 1986, the superconducting compounds which the Examiner admits in applicant's data of December 3, 1986 shown the measurements of critical temperatures. Consequently, the Examiner's statement acknowledges the Examiner's apparent agreement in the fact that the materials were in this country in the middle of November 1986. Applicant's respectfully disagree with the Examiner's statement, "notwithstanding the possible uniqueness of the present facts, however, the Asahi Shinbum article is still deemed to be prior art under 35 USC 102(a), which the applicant's have not been able to overcome with a showing of early date in this country or showing of their direction and control over the work done by the third party." Applicant's note that the Asahi Shinbum article provides no enablement but merely is an assertion of a result achieved which points to applicant's own work which was reported in the article applicant's cite in their application at page 6. Consequently, any description in the Asahi Shinbum article is applicant's own work. If one would follow the rationale of the Examiner, if an applicant publishes an article and

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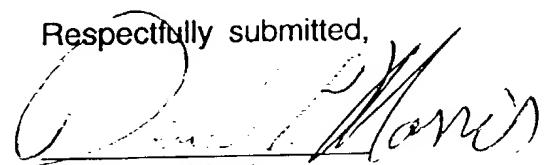
some other third party reports that same result prior to applicant's filing of a patent application, (which is subsequently filed within one year of applicant's own publication) the reporting of applicant's work by the third party would be prior art against applicant's application. Such a result would deny applicant's the one year grace period provided under 35 USC 102(b).

In view of the changes to the claims and the remarks herein, the Examiner is respectfully requested to reconsider the above-identified application. If the Examiner wishes to discuss the application further, or if additional information would be required, the undersigned will cooperate fully to assist in the prosecution of this application.

Please charge any fee necessary to enter this paper to deposit account 09-0468.

If the above-identified Examiner's Action is a final Action, and if the above-identified application will be abandoned without further action by applicants, applicants file a Notice of Appeal to the Board of Appeals and Interferences appealing the final rejection of the claims in the above-identified Examiner's Action. Please charge deposit account 09-0468 any fee necessary to enter such Notice of Appeal.

Respectfully submitted,



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